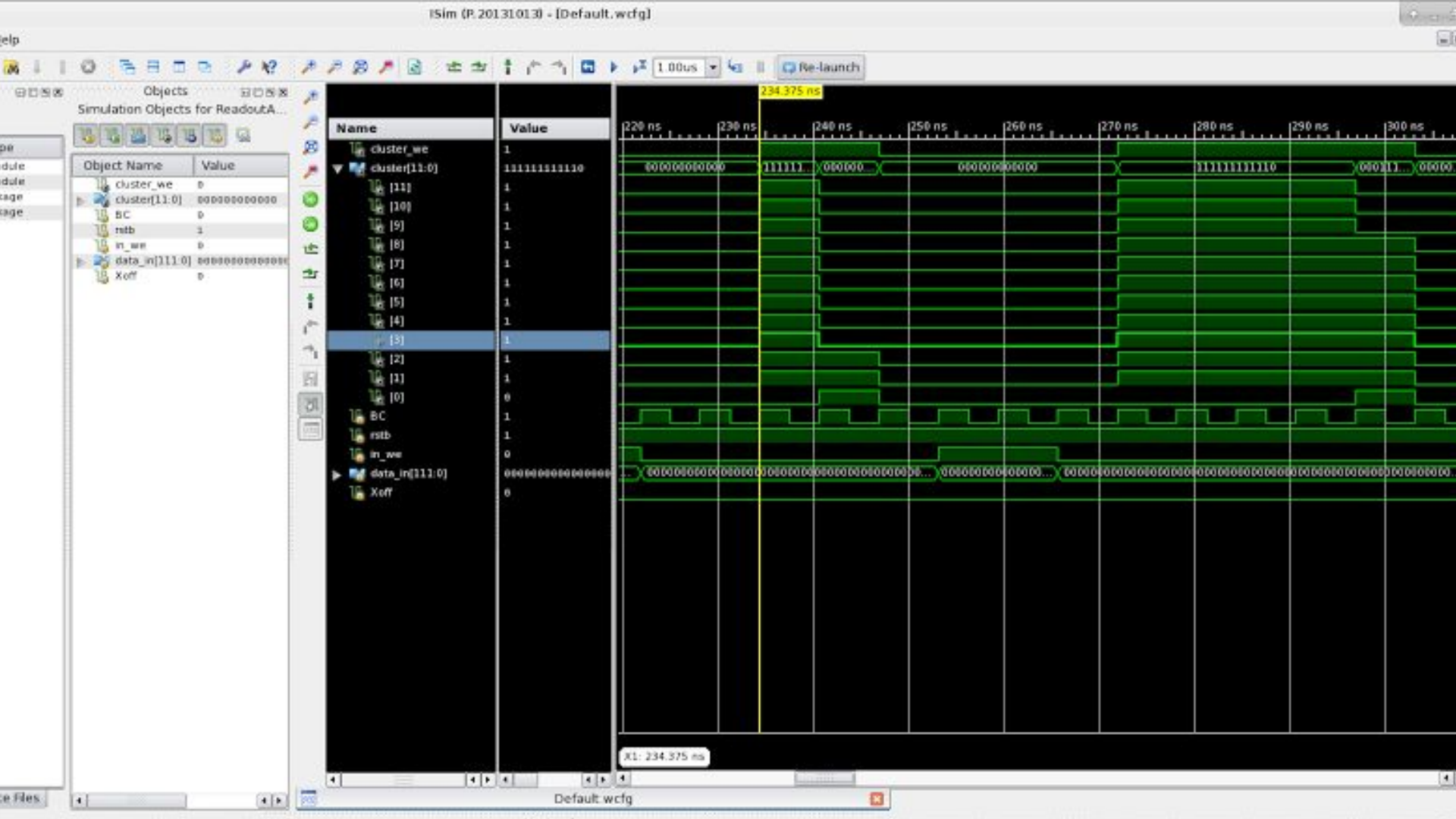
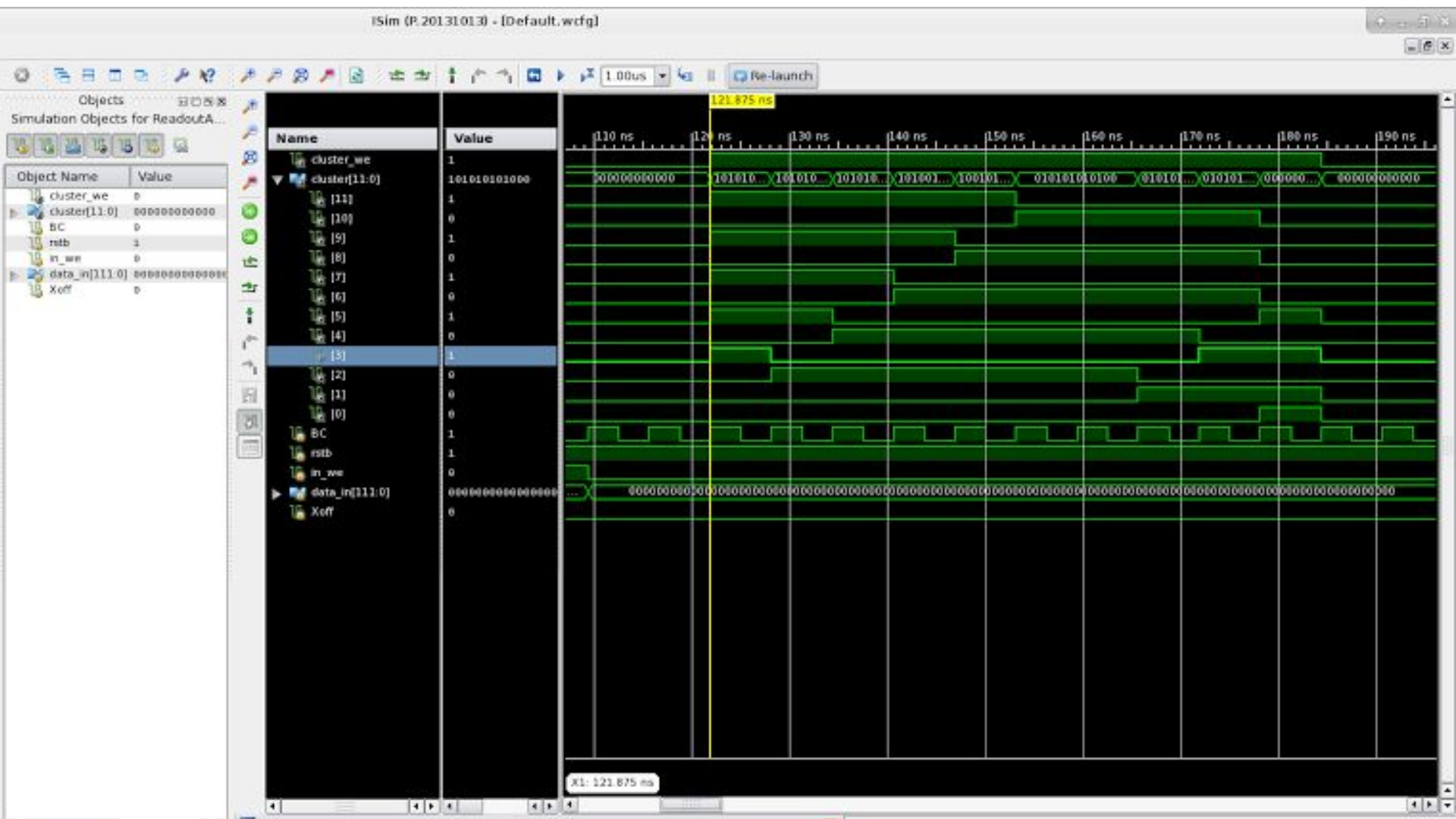
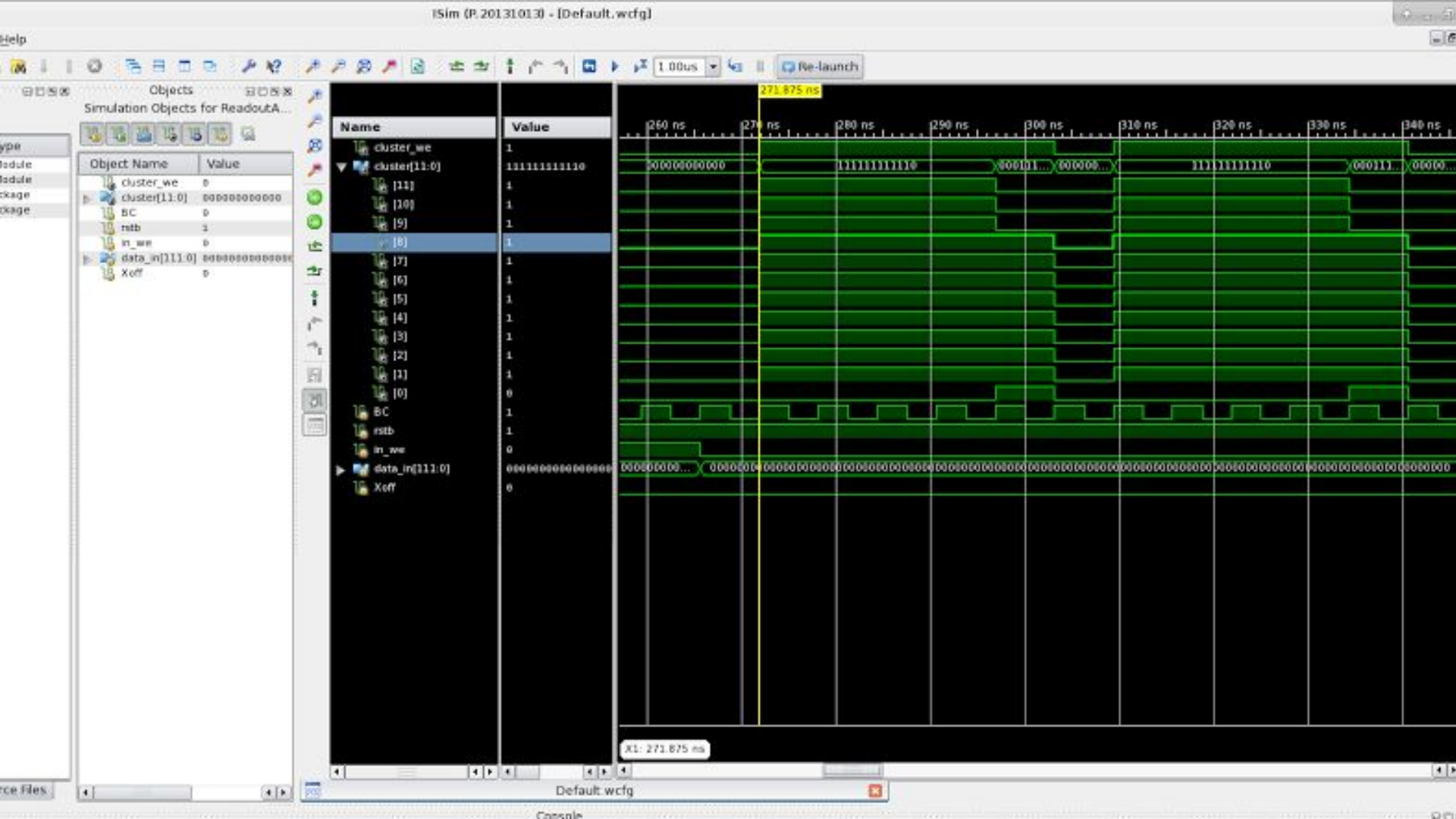
Readout Adapter Details

- Readout Adapter’s purpose is to convert 112-bit-wide data coming from L0L1 to 12-bit-wide “cluster” format required by the readout block
- Readout Adapter is implemented with a FIFO and a latch
- A state machine reads out the 112 bits sequentially into 11-bit chunks (the 12th bit is the “last cluster” bit)
- We can actually drop the Data Valid bit at this point because the number of cluster packets uniquely identifies the number of valid data packets
- 1 hit on CHESS II translates to 2 cluster packets, 8 hits to 10 cluster packets


ISim (P.20131013) - [Default.wcfg]
Re-launch
1.00us
234.375 ns
Objects
Simulation Objects for ReadoutA...
Object Name
Value
cluster_we
cluster[11:0]
BC
rstb
in_we
data_in[111:0]
Xoff
Name
Value
220 ns
230 ns
240 ns
250 ns
260 ns
270 ns
280 ns
290 ns
300 ns
111111111110
X1: 234.375 ns
Default.wcfg


ISim (P.20131013) - [Default.wcfg]
Objects
Simulation Objects for ReadoutA...
Object Name
Value
cluster_we
cluster[11:0]
BC
rstb
in_we
data_in[111:0]
Xoff
Name
Value
cluster_we
cluster[11:0]
[11]
[10]
[9]
[8]
[7]
[6]
[5]
[4]
[3]
[2]
[1]
[0]
BC
rstb
in_we
data_in[111:0]
Xoff
1.00us
Re-launch
121.875 ns
110 ns
120 ns
130 ns
140 ns
150 ns
160 ns
170 ns
180 ns
190 ns
X1: 121.875 ns


ISim (P.20131013) - [Default.wcfg]
Help
Re-launch
1.00us
Objects
Simulation Objects for ReadoutA...
Object Name
Value
cluster_we
cluster[11:0]
BC
rstb
in_we
data_in[111:0]
Xoff
Name
Value
271.875 ns
260 ns
270 ns
280 ns
290 ns
300 ns
310 ns
320 ns
330 ns
340 ns
X1: 271.875 ns
Default.wcfg

- Next steps: in correspondence with Aditya, need to implement a latch that temporarily holds data if Xoff is asserted
- If no data is associated with a BC, need to send a “no data” signal
- Perhaps this could be done by sending one single packet, as this is not associated with any valid data (the shortest actual data requires 2 packets)